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JANUARY 13.

Mr. ARTHUR ERWIN BROWN, Vice-President, in the Chair.

Twelve persons present.

The death of Bushrod W. James, M.D., a member, was announced.

JANUARY 20.

Mr. ARTHUR ERWIN BROWN, Vice-President, in the Chair.

Sixteen persons present.

Papers under the following titles were presented for publication:

"Myriapoda from Beulah, N. M.," by Ralph V. Chamberlain.

"List of the Polycestid Gregarines of the United States," by Howard Crawley.

Preparation of Diatoms.—MR. FRANK J. KEELEY called attention to a method recently employed in studying the structure of diatoms, which is supplementary to those previously described by him:—

Mounting broken valves on edge so as to obtain a sectional view, and mounting in a manner that permitted of successively immersing the forms in media of varying refraction indices.

The present method consists in depositing on the diatoms a thin film of silver, using the solution ordinarily employed for silvering mirrors, which, if dropped on the cover-glass containing the diatoms, will silver the latter to a considerable extent before any appreciable quantity of the metal is deposited on the glass. The finer the irregularities on the surface the heavier will be the deposit of silver, and the best results are obtained on gatherings containing broken and corroded forms, separated plates, etc., the structure of which becomes quite apparent. Thus conclusions can be drawn as to the correct nature of a complete and perfect valve which will be more accurate than when it is itself examined, particularly if the markings are fine, when they become filled with silver.

Under favorable conditions, after mounting in balsam and examining by transmitted light, valves or portions of them may be found having the appearance of plates of perforated metal, and while the results so far have principally been corroborative of those obtained by previous methods, some features not distinguishable under ordinary conditions are rendered apparent, among which may be mentioned a ring of processes near the margin of the valve of *Coscinodiscus subtilis*, which extends toward the interior of the frustule.

The character of the raphe is particularly well displayed in *Navicula* and its allies, as well as the small channels in the central and terminal nodules, which doubtless have some function in connection with the

protoplasmic currents causing the motion of diatoms. In *Navicula rhombooides* it becomes apparent that the raphe is single as in other species of this genus, and that the double raphe, based on which this form has been placed in a separate genus, is an optical illusion.

This process differs from that by which the late A. Y. Moore plated diatoms, as his were covered with a heavy layer of silver or gold and examined as opaque objects. It is rather a staining process, but likewise differs from the methods of Moore and others in this direction, which filled the cavities in the valves with opaque matter, while in this case the silica itself is rendered opaque, or nearly so.

As in all microscopical investigation, it is necessary to use judgment in interpreting appearances seen, as they will vary materially in the same species, depending on whether the entire structure is preserved. *Isthmia* affords an excellent example. Some valves may be found in which the coarse markings appear as holes in the blackened silica, showing that the secondary structure is entirely gone. Others will show the secondary structure in a similar manner as holes in a darkened plate, but still others will have the large oval markings entirely covered with a film of silver, indicating that there is a still finer and ordinarily invisible "tertiary structure" or plate, which serves as a basis on which the silver is deposited. Exactly the same conditions may be noted on the external plate of *Coscinodiscus asteromphalus*, but there is never an indication that the eye-spots on the inner plate are anything but clear openings.

JANUARY 27.

The President, SAMUEL G. DIXON, M.D., in the Chair.

Twenty-two persons present.

The following were elected members: James Spear, Henry A. Lang, and Edw. B. Meigs.

William Morton Wheeler, of Austin, Tex., and Theodore Boveri, of Würzburg, were elected correspondents.

The following were ordered to be printed: